**UTAH GEOLOGICAL SURVEY**
*a division of*
**UTAH DEPARTMENT OF NATURAL RESOURCES**

**Plate 1**
**Utah Geological Survey Map 163**
**Geologic Map of the Swasey Peak NW Quadrangle**

Base map from U. S. Geological Survey
Swasey Peak N.W. 7.5′ Quadrangle, 1972

Field work in 1988 & 1989
Lori J. Douglas, Cartographer

1994 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION

# GEOLOGIC MAP OF THE SWASEY PEAK NW QUADRANGLE, MILLARD COUNTY, UTAH

**by**

**Dorothy Sack**

**1994**

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**Plate 2**
**Utah Geological Survey Map 163**
**Geologic Map of the Swasey Peak NW Quadrangle**

## DESCRIPTION OF MAP UNITS

**Qac** Undifferentiated alluvium and colluvium (late Pleistocene and Holocene) - *poorly sorted, coarse- to fine-grained sediments consisting of fluvially reworked colluvium or alluvium with a significant colluvial component; unit occurs at or above the piedmont junction separating other Quaternary deposits below from bedrock above; estimated maximum thickness is 15 feet (4.6 m).*

**$Qaf_1$** Young alluvial-fan deposits (late Pleistocene and Holocene) - *coarse- to fine-grained alluvium and debris-flow sediments deposited on piedmont slopes since regression of Lake Bonneville from the Bonneville shoreline; $Qaf_1$ deposits are generally finer toward the distal portion of alluvial fans, where they may be locally overlain by eolian sediments; approximately 0.5 to 25 feet ( 0.2 to 7.6 m) thick.*

**$Qaf_2$** Intermediate alluvial-fan deposits (middle (?) to late Pleistocene) - *dominantly coarse-grained alluvium and debris-flow deposits found on the piedmont of the House Range above the Bonneville shoreline; $Qaf_2$ consists of alluvial fans that were abandoned when Lake Bonneville regressed from the Bonneville shoreline; thin accumulations of loess occur on the surface of the unit, which is from a few to tens of feet thick.*

**$Qaf_3$** Old alluvial-fan deposits (early (?) to middle (?) Pleistocene) - *bouldery alluvial-fan deposits comprising steep spurs which project basinward from the front of the House Range; $Qaf_3$ lies adjacent to and above outcrops of $Qaf_2$; overlain by fine-grained weathering products and loess; the unit is over 100 feet (30 m) thick.*

**Qed** Eolian dunes (late Pleistocene and Holocene) - *well-sorted sand to very poorly sorted mixtures of sand, silt, and clay; composition varies from mostly gypsum, to mixed, to mostly nongypsum minerals; forms include parabolic, transverse, dome, shrub-coppice, and lunette dunes; approximately 1.5 to 15 feet (0.5 to 4.6 m) thick.*

**Qeg** Gypsiferous eolian sheet sand (late Pleistocene and Holocene) - *primarily sand-sized gypsum deposited as a sand sheet rather than in well-developed dunes; the source of the gypsum is the saline marl flats of the basin floor; thickness varies from 0.5 to 10 feet (0.2 to 3 m).*

**Qel** Eolian-reworked lacustrine fines (Holocene) - *dominantly marly but locally gypsiferous, lacustrine fine-grained sediments entrained from the valley floor and redeposited downwind on the valley floor in small shrub-coppice dunes; Qel deposits are typically less than 3 feet (0.9 m) thick.*

**Qes** Nongypsiferous eolian sheet sand (late Pleistocene and Holocene) - *primarily nongypsum sand deposited as a sheet rather than in well-developed dunes; moderately well sorted to well sorted; found downwind of sandy, ephemeral stream channels which drain areas of Prospect Mountain Quartzite in the House Range; 0.5 to 5 feet (0.2 to 1.5 m) thick.*

**Qla** Undifferentiated lacustrine and alluvial deposits (late Pleistocene and Holocene) - *generally poorly sorted, coarse- to fine-grained sediments composed of lake-reworked alluvial-fan deposits, fan-reworked lake deposits, and areas where lake and fan deposits are not distinguishable at the map scale; lake-reworked fan deposits consist of pre-Bonneville alluvial fans etched by shorelines; Qla becomes finer grained in the downslope direction; generally less than 10 feet (3 m) thick.*

**Qlf** Fine-grained lacustrine deposits (late Pleistocene) - *poorly sorted sand, silt, clay, and marl found between the basin-floor marl flats and the piedmont; locally saline; locally reworked by fluvial or eolian processes; in many places the contact between Qlf and the marl flats is marked by a Holocene bluff; generally less than 10 feet (3 m) thick.*

**$Qlg_1$** Young lacustrine gravel (Holocene) - *sand and pebbles, which include clasts of lithified Lake Bonneville marl and tufa; found in coastal landforms created by low-level Tule Valley lakes after the valley was reisolated from Lake Bonneville; locally overlain by eolian sediments; approximately 10 feet (3 m) thick.*

**$Qlg_2$** Intermediate lacustrine gravel (late Pleistocene) - *primarily pebble- to cobble-sized clasts deposited in coastal landforms by Lake Bonneville between about 19,500 and 14,000 years ago; estimated maximum thickness is 6 feet (1.8 m).*

**$Qlg_3$** Old lacustrine gravel (late Pleistocene) - *sandy to well-sorted pebbles and cobbles deposited by transgressive Lake Tule between about 30,000 and 19,500 years ago; found in shoreline features below an elevation of 4,582 feet (1347 m); maximum thickness about 30 feet (9 m).*

**Qlm** Lacustrine marl (late Pleistocene and Holocene) - *includes Lake Bonneville pristine white marl and sandy marl reworked by Lake Bonneville and regressive Lake Tule; contains abundant ostracodes and occasional gastropods; locally displays efflorescing salts; commonly overlain by Qel; thickness varies from a few inches to at least 12 feet (3.7 m).*

**Qls** Lacustrine sand (late Pleistocene) - *pebbly, marly sand deposited over Qlm just offshore from the Provo shoreline during Provo shoreline time; carbonate-coated gastropod shells are common; about 25 feet (7.6 m) thick.*

**Qlt** Lacustrine tufa (late Pleistocene and Holocene) - *calcium carbonate precipitated during Provo shoreline time and during the subsequent regressive phases of Lakes Bonneville and Tule; forms a shelf which lies about 40 to 60 feet (12 to 18 m) below the Provo shoreline on the House Range piedmont and includes broken, reworked tufa found at lower elevations; from 0.1 to approximately 1.5 feet (0.3 to 0.45 m) thick.*

**Qpm** Playa mud (Holocene) - *thin deposits of clay, silt, and marl, with small amounts of sand, overlying basin-floor marl (Qlm); chloride rich; typically flooded.*

**Qsm** Marsh deposits (Holocene) - *fine-grained sediments and marl found in association with springs and related high-ground-water surfaces on the basin floor; generally saline and organic rich; thickness not determined.*

**OCn** Notch Peak Formation (Upper Cambrian to Lower Ordovician) - *cliff-forming, massive limestone and dolomite; primarily medium-gray, very fine-grained, slightly cherty limestone; flat limestone pebble conglomerate and coarse-grained detrital limestone found locally; approximately 1,400 feet (430 m) thick.*

Units in cross section only

**Qu** Undifferentiated Quaternary deposits (early to late Quaternary) - *alluvial, eolian, lacustrine, playa, and spring deposits forming the upper part of the basin fill; estimated maximum thickness 300 feet (90 m).*

**Tu** Undifferentiated Tertiary deposits (middle to late Tertiary) - *basin fill; estimated maximum thickness is 6,500 feet (2,000 m) (see Allmendinger and others, 1983).*

**Cou** Upper member of the Orr Formation (Upper Cambrian) - *gray interbedded shale and limestone; 600-700 feet (180-215 m) thick.*

**Cob** Big Horse Member of the Orr Formation (Upper Cambrian) - *medium-gray, thick-bedded, bioclastic limestone that contains oolites and indistinct biohermal structures; 715 feet (218 m) thick.*

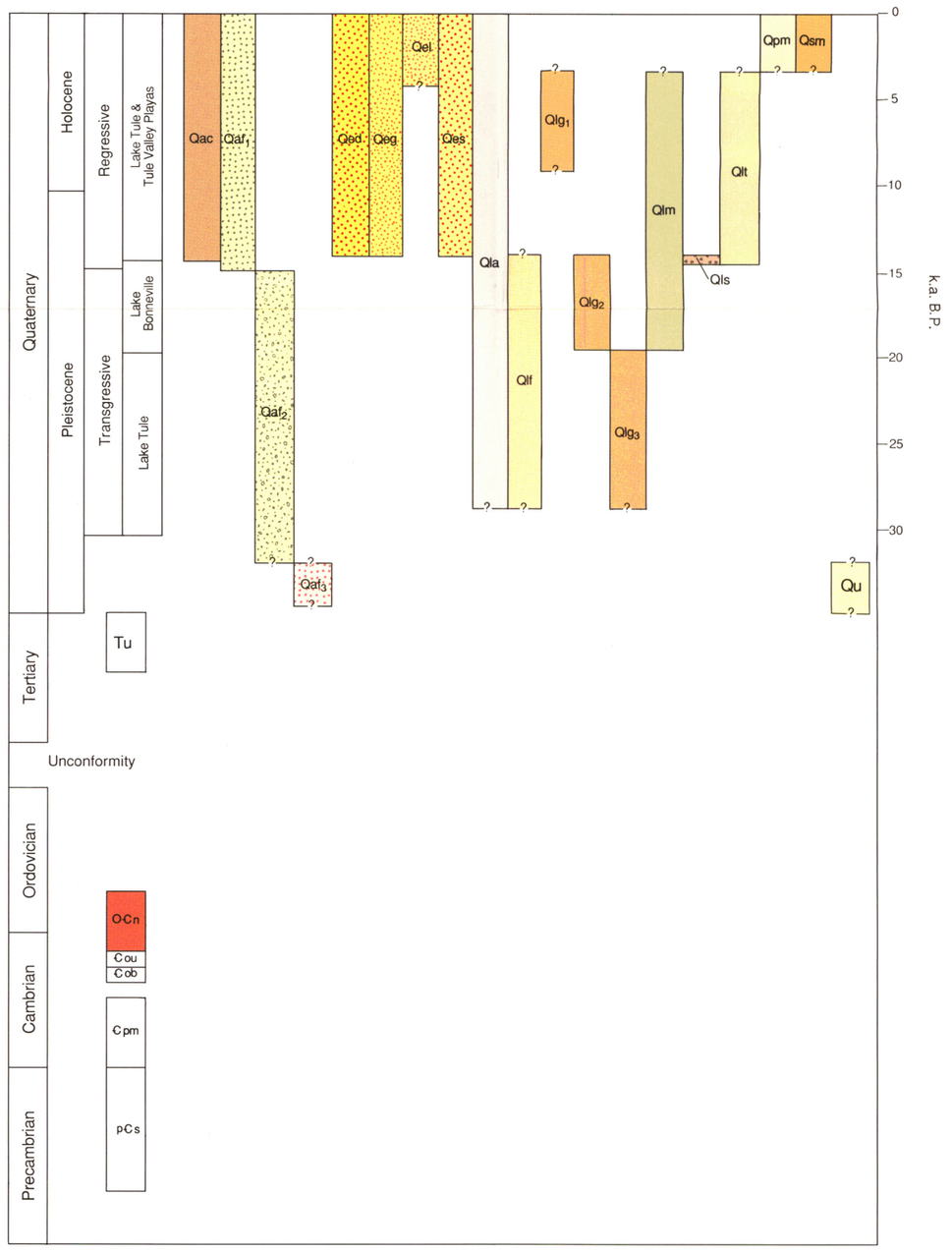
**Cpm** Prospect Mountain Quartzite (Lower Cambrian) - *pinkish-gray to light-brown-gray quartzite; approximately 4,000 feet (1,200 m) thick.*

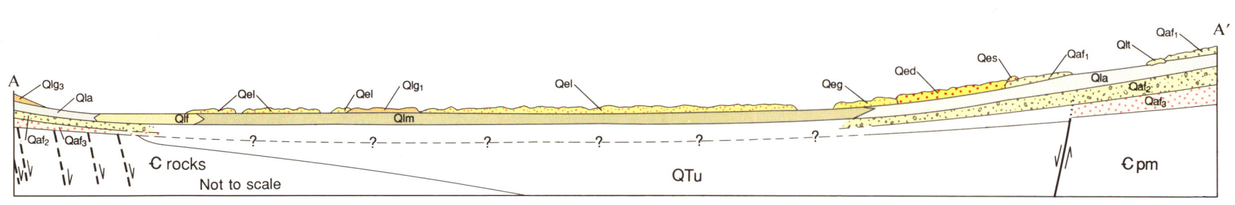
**pCs** Undifferentiated Precambrian sedimentary rocks (Precambrian) - *thickness greater than 3,900 feet (1,200 m) (see Allmendinger and others, 1983).*

## MAP SYMBOLS

- Contact
- Piedmont Scarp Fault - *dotted where concealed, bar and ball on downthrown side*
- B B — Bonneville shoreline of Lake Bonneville
- P P — Provo shoreline of Lake Bonneville
- BL BL — Lowest shoreline of Lake Bonneville in Tule Valley
- TH TH — Highest shoreline of Lake Tule (pre-Lake Bonneville)
- 12 — Strike and dip of bed
- Borrow pit
- Qes/Qaf — Younger deposits thinly distributed over older deposits

## CORRELATION OF MAP UNITS




This schematic cross section follows the line of cross section A-A' and shows the relationship of the Quaternary deposits. QTu represents undifferentiated Quaternary-Tertiary basin-fill deposits.